



COMPONENTS NEWS

GT CHIP ARRIVES

MSI has announced its first card based on nVidia's GeForce 7800GT chip. The NX7800GT-T2D256E will be the second-fastest card in the company's line-up and uses the same technology as the high-end 7800GTX.

The NX7800GT is a little slower, running with a core speed of 400MHz, 500MHz memory and 20 pixel pipelines; the 7800GTX has a 430MHz core, 600MHz memory and 24 pixel pipelines. Performance should still be better than any other single card on the market.

The cards are now available and will retail at around £300. We expect other manufacturers to announce products based on the GeForce 7800GT soon. We'll track one down and review it in next month's *Shopper*.



64-BIT INTEL PROCESSORS CHEAPER

As we were going to press it was rumoured that Intel was to cut prices on its 64-bit 600-series Pentium 4 processors. The initial cuts, announced in March, reduced the price of the Pentium 4 630 from £224 (around £124) to \$183 (£102) and the Pentium 4 640 from \$273 (£152) to \$224 (£125).

REVIEW BAREBONES SYTEM

SHUTTLE SN26P SLI

RATING ★★

PRICE £468 inc VAT (£1,139 inc VAT including two 6800GTs)

DETAILS www.shuttle.com

Shuttle's barebones system doesn't look as if it could house a powerful SLI system, but the company has managed it with its SN26P SLI. It uses the same chassis that we've seen before, but inside the motherboard has nVidia's nForce4 SLI chipset and supports all AMD Socket 939 processors.

However, while most nForce SLI boards have their two PCI-E x16 slots a fair distance apart, the SN26P SLI has them practically next to each other. In fact, the second slot is where the single PCI expansion slot is normally located.

This causes a couple of problems. First, the graphics cards you'd want to install have large heat sinks and fans that prevent you placing them so close together. Second, removing the heat sinks means that the cards will overheat and be unusable.

Shuttle's answer is to do away with the heat sinks and use its own customised heat pipe instead. This draws the heat away from the cards to a heat sink mounted above the power supply, where two fans push the heat out of the case. This brings the number of fans in the case to six, but it's not actually that loud. In fact, the low-level hum is no worse than that from an average desktop computer.

Shuttle sells two versions of this case: one with two Leadtek 6800GT graphics cards preinstalled and one with just the heat pipe. There's a massive £670 price difference between the two versions; you can buy two Leadtek 6800GT graphics cards for £470 but you then have to take off the heat sinks and fit Shuttle's, invalidating your warranty in the process. Alternatively, you can fit any other



nVidia SLI-enabled graphics cards, but there's no guarantee you can fit the heat pipes to all models.

At this stage, though, you don't have a full computer, as you also need to buy a processor, memory, hard disk and optical drive. These are fairly easy to fit, although the cramped insides make it fiddly work. We also had trouble with the optical drive's tray getting stuck on the inside of the case.

Once Windows was running, we installed the latest nVidia graphics drivers and enabled SLI mode. While it worked with our test system, Shuttle supplies only a 350W power supply and nVidia recommends a minimum of 450W.

We tested it using an Athlon 64 3500+ and 1GB of RAM in a dual-channel configuration. It scored 127 in *Shopper's* benchmarks and 4,198 in PCMark04. Graphics performance was good, with scores of 12,689 in 3DMark03 and 98.8fps in Doom 3. It handles higher resolutions, too.

Despite the reasonable graphics performance, the SN26P SLI is impossible to recommend as it's so expensive and has a small power supply.

David Ludlow

✓ SLI in a tiny case; surprisingly quiet

✗ Small power supply; outrageously expensive

SPECIFICATIONS nForce 4 SLI chipset, supports AMD Socket 939 processors, two DIMM slots, two SATA, one IDE, one Gigabit LAN, four USB, 6-in-1 memory card reader. **Part code** SN26P SLI

HOTLIST GRAPHICS CARD

GE CUBE X800 XL

RATING ★★★★★

PRICE £205 inc VAT

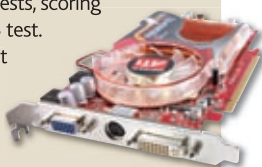
SUPPLIER www.sphinxcomputers.com

DETAILS www.gecube.com



Based on ATI's Radeon X800 XL chip, GeCube's graphics card perfectly balances price against performance. With 16 pixel pipelines, a 500MHz core speed and 1GHz of GDDR3 memory, it has fantastic specifications. These shone through in our tests, scoring 61.4fps in our Doom 3 test.

This is an excellent card for those that want high-end performance without the huge cost.



SPECIFICATIONS ATI Radeon X800 XL, 256MB GDDR3 memory, PCI-E x16 interface, TV out (composite, component and S-video). **Part code** VC26057

HOTLIST PROCESSOR

INTEL Pentium 4 550

RATING ★★★★★

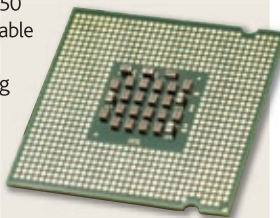
PRICE £181 inc VAT

SUPPLIER www.pcnextday.co.uk

DETAILS www.savastore.com



The Pentium 4 550 runs at a respectable clock speed of 3.4GHz, providing ample raw power, and is particularly strong at video compression. The processor will work with any LGA775 motherboard, which also means you can use the latest DDR2 memory and PCI-E graphics cards.



SPECIFICATIONS 3.4GHz clock speed, LGA775 connector, 800MHz frontside bus. **Part code** BX8-547PG3400E

HOTLIST BAREBONES CASE

BIOSTAR iDEQ 330P

RATING ★★★★★

PRICE £215 inc VAT

SUPPLIER www.microdirect.co.uk

DETAILS www.biostar.com.tw

Biostar's iDEQ 330P uses the same principles as Intel's BTX design, but applies it to Socket 939 AMD processors. A redesigned motherboard means that a single fan is all that's needed to cool the processor and motherboard.

The case is very well designed and opens like a car bonnet. It achieved good scores in our performance tests.



SPECIFICATIONS nVidia nForce 4 chipset, supports AMD Socket 939 processors, two DIMM slots, one PCI, one PCI-E x16, one PCI-E x1 slot, one 5¼" drive bay, two 3½" drive bays, 7-in-1 memory card reader, three USB2.0, one Gigabit Ethernet, two FireWire ports, eight-channel audio. **Part code** BARBI01DQ330P



REVIEW GRAPHICS CARD

PNY GeForce 7800 GTX

RATING ★★★★★

PRICE £387 inc VAT

SUPPLIER <http://uk.insight.com>DETAILS www.pny.com

We first reviewed nVidia's latest graphics chip in *What's New*, October 2005, when we looked at Biostar's GeForce 7800 GTX. PNY's version of the card has the same 7800 GTX chipset and 256MB of GDDR3 memory. It has 24 pixel pipelines, a core speed of 430MHz and memory running at 600MHz (1.2GHz effective); these specifications are the same as those of Biostar's card and nVidia's reference design. PNY's card uses the reference heat sink and fan. Considering it's a lot quieter than the one used on the 6800 Ultra, this isn't a bad thing.

They are remarkably similar in many ways, but our tests showed how cards from different manufacturers can differ under load. We used the same driver revision and Athlon 4000+ test system in both cases. First, our Doom 3 test running at a resolution of 1,024x768 returned a score of 105.3fps, almost 7fps faster than Biostar's card, although the game won't run much faster due to processor limitations. However, switching the game to 1,600x1,200 and turning on maximum detail returned a score of 64.4fps – almost 13fps faster

than Biostar's card. The score of 15,821 in 3DMark03 is, again, slightly higher.

PNY's bundle includes Far Cry, a game that's capable of pushing the graphics card to its limit and, as it uses Pixel Shader 3.0, using all the high-end features that the card supports.

The Biostar card impressed us, but the PNY 7800 GTX is even better. It's good value (those on a tight budget should read our graphics card Labs on page 177), but you'll need a beefy PC and a monitor capable of 1,600x1,200 to get the most out of it.

David Ludlow

✓ Extremely fast; relatively quiet

✗ Demands a powerful system and a monitor that supports a resolution of 1,600x1,200

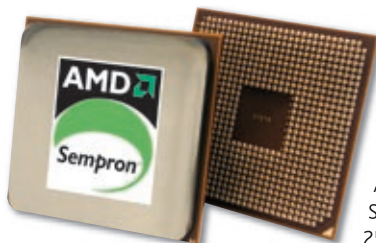
SPECIFICATIONS nVidia GeForce 7800 GTX, 256MB GDDR3 memory, x16 PCI-X interface, two DVI-I outputs, Far Cry, TV out. **Part code** G77800XN1F26XPB

REVIEW PROCESSOR

AMD Sempron 3400+

RATING ★★★★★

PRICE £98 inc VAT

SUPPLIER www.microdirect.co.ukDETAILS www.amd.com

instructions. It also has an upgraded and more efficient memory controller and uses a 90nm fabrication process. It's not quite an Athlon 64, though; the Sempron 3400+ has just 256KB of Level 2 cache and the Athlon 64 has at least twice this.

Things also get a little confusing when trying to compare the Sempron 3400+, which has a 2GHz core speed, against other processors in the range. The model number doesn't compare directly against Athlon 64s; instead the Sempron 3400+ has performance similar to the Athlon 64 3000+.

We tested the 3400+ on an ECS nForce4-A754 motherboard. Scores of 115 in *Shopper's* application benchmarks and 3,980 in PCMark04

show it's a reasonable performer. With the cost of Socket 754 motherboards at an all-time low, it would do well in a low-budget desktop PC.

We have some concerns, though. First, the Socket 754 platform doesn't offer an upgrade path. Second, a full-blown Socket 754 Athlon 64 3400+ can be bought for just £20 more. It leaves us wishing that the Sempron 3400+ was just a bit cheaper to tempt buyers on a budget.

David Ludlow

✓ Cheap; supports 64-bit instructions

✗ Socket 754 doesn't offer an upgrade path

SPECIFICATIONS Socket 754, 2.0GHz core speed. **Part code** SDA3400BXBOX

HOTLIST BAREBONES CASE

FOXCONN Tuckaway

RATING ★★★★★

PRICE £200 inc VAT

SUPPLIER sales.uk@foxconn.comDETAILS www.foxconnchannel.com

If you want to build a small PC for basic office tasks, Foxconn's Tuckaway is a good starting point. Its tiny frame comes preinstalled with a DVD drive and memory card reader, while it will house an LGA775 Pentium 4 processor up to 3.4GHz. There's room for a single SATA hard disk, although not all hard disks will fit into the caddy. For a basic PC, though, it's an excellent choice.



SPECIFICATIONS Intel 915 chipset, takes LGA775 processors (max 3.4GHz), DVD/CD-RW combo drive, 7-in-1 memory card reader, six USB2.0 ports, two FireWire ports, one PCI slot. **Part code** Tuckaway

HOTLIST PROCESSOR

AMD Athlon 64 3400+

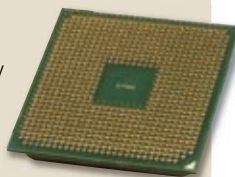
RATING ★★★★★

PRICE £126 inc VAT

SUPPLIER www.microdirect.com

AMD's Athlon 64 3400+ on Socket 754 is nearly as fast as a Socket 939 Athlon, and significantly cheaper. Combine it with one of the many cheap Socket 754 motherboards and you can build a powerful computer on a tight budget.

Windows XP 64-bit edition is now available, so it won't be long before there are applications that will take advantage of its highly developed capabilities.



SPECIFICATIONS 2.4GHz clock speed, Socket 754, 2x 800MHz HyperTransport bus. **Part code** ADA3400AXBX

HOTLIST LGA775 MOTHERBOARD

ECS PF21 Extreme

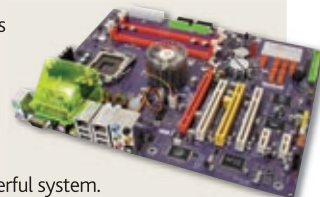
RATING ★★★★★

PRICE £100 inc VAT

DETAILS www.wirral-it.co.uk

Featuring Intel's 925XE chipset, ECS's PF21 Extreme motherboard provides the base for a powerful system. It supports 1,066MHz frontside bus (FSB) processors and DDR2 RAM, includes a 54g wireless adaptor and has six SATA ports.

For future upgrade potential you can't go wrong with this board, and it's very good value, too.



SPECIFICATIONS Intel 925XE PCI Express chipset, four DDR2 slots, three PCI slots, two IDE ports, six SATA ports, two PCI-E x1 slots, one PCI-E x16 slot



REVIEW MOTHERBOARD

ECS
KN1 SLI Extreme

RATING ★★★★★

PRICE £90 inc VAT

SUPPLIER www.directfrom.comDETAILS www.ecs.uk.com

Because we have reviewed graphics cards in our Labs (page 177), we thought it would be a good idea to bring you some components that you can use with them. The obvious accessory is an SLI motherboard. ECS's AMD Socket 939 KN1 SLI Extreme is the SLI version of the KN1.

The main difference is the inclusion of the second PCI-E x16 slot. The chipset automatically detects when a second graphics card is installed, so you can add a second nVidia graphics card at any point. However, using the motherboard in this mode means that you block access to the PCI-E x1 slot, although you're left with three PCI slots for expansion.

The motherboard is also generously populated with storage connectors, with three ATA-133 and six SATA ports. This gives you plenty of room for storage and you can even use RAID to increase performance or reliability. Finally, with two Gigabit Ethernet ports, you can connect to multiple networks or share an internet connection.

ECS supplies the KN1 Extreme SLI with its Top Hat Flash. This is an additional BIOS that clips on top, so you can restore settings after overclocking or if your original BIOS becomes corrupted. Another good feature is the small cooling fan and vent mounted on the rear panel, which helps draw hot air away from your processor.

Installation is pretty easy as ECS has an automatic installation utility, which detects and installs all the Windows drivers you'll need. It takes just a few minutes to get going and we had no problems.

We tested the motherboard using an AMD Athlon 3500+ processor and recorded scores of 127 in *Shopper's* application benchmarks and 4,337 in PCMark04. These compare favourably to the scores we got from the standard non-SLI KN1 Extreme motherboard.

While the original board remains excellent value for anyone not interested in 3D graphics, the KN1 SLI Extreme is a brilliant example of an SLI board and very good value, too.

David Ludlow

✓ Fast; lots of connectors

✗ SLI mode blocks access to all PCI-E x1 slots

SPECIFICATIONS nForce 4 SLI chipset, supports AMD Socket 939 processors, three PCI, one PCI-E x1, two PCI-E x16, four DIMM slots, two Gigabit Ethernet LAN, ECS Top Hat Flash, three IDE, six SATA, four USB2.0, FireWire (on included blanking plate). **Part code** KN1 SLI



REVIEW INTEL MOTHERBOARD

ABIT
N18 SLI

RATING ★★★★★

PRICE £127 inc VAT

SUPPLIER www.microdirect.co.ukDETAILS www.abit.com.tw

ECS's KN1 SLI Extreme (left) is a good choice if you have an AMD processor and you want SLI. If you have an Intel processor, though, Abit's N18 SLI can help. The board uses nVidia's nForce 4 SLI chipset and has an LGA775 socket. You can run any LGA775 Intel processor including those with a 1,066MHz frontside bus. Using two cards in SLI mode means you lose one PCI-E x1 slot, but this leaves a further PCI-E x1 and two PCI slots free for further expansion.

To keep noise down, Abit has implemented its OTES heat pipe technology, which passively cools the Northbridge. However, the large heat sink, which sits next to the back panel, means there's no room for the audio outputs. Instead, Abit provides these on a riser card, but this is very unstable unless you screw it in.

The µ-Guru software allows you to overclock and control the fan speeds. It has plenty of predefined profiles including a quiet mode, which lowers performance but drops the noise of the fans to a low hum.

A nice touch is the LED on the motherboard, which gives double-digit error codes. You can look these up in the manual and troubleshoot pre-Windows hardware faults more easily than with the usual BIOS beeps.

Installation was problematic for this board. After loading Windows XP's Service Pack 2 (SP2) we installed the nVidia chipset drivers, which stopped our optical drive from working. In the end we had to remove SP2, reinstall the nVidia drivers and reapply the service pack.

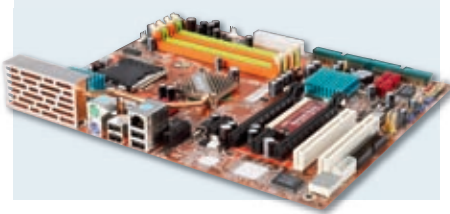
We tested the system using a 3.6GHz Pentium 4 processor and 1GB of RAM installed in a dual-channel memory configuration. It returned a score of 133 in the *Shopper* application benchmarks and 5,449 in PCMark04. This was just behind Gigabyte's GA-8N SLI Royal motherboard, reviewed in *Shopper* July 2005. There's little to choose between the two boards and, as they're both around the same price, either makes a good buy.

David Ludlow

✓ Passively cooled Northbridge; good performance

✗ Difficult driver installation

SPECIFICATIONS nVidia nForce 4 chipset, supports LGA775 processors, two PCI, two PCI-E x1, two PCI-E x16, four DIMM slots, Gigabit Ethernet LAN, two IDE, six SATA, four USB2.0, FireWire (on included blanking plate), 7.1 audio via riser card. **Part code** N18 SLI



REVIEW DUAL-CORE PROCESSOR

AMD
Athlon 64 X2 3800+

RATING ★★★★★

PRICE £275 inc VAT

SUPPLIER <http://uk.insight.com>DETAILS www.amd.com

It's usual for processor manufacturers to release faster and faster variants of a line, but AMD seems to be going in reverse with its Athlon 64 X2 products. After launching the 4800+, AMD then released slower versions, including the 4200+. Now it's the turn of the 3800+.

It's a Socket 939 processor and should work on all existing 939 motherboards, although some will require a BIOS upgrade first. As with all other dual-core processors, the X2 3800+ has two cores, each running at 2.0GHz. This is similar to building a PC that uses two Athlon 64 3200+ processors.

Performance is complicated as dual-core processors come into their own only when multitasking or running applications written to take advantage of multiple cores. These applications are known as multithreaded and work by running each task within a program independently, rather than single-threaded applications, which have to run tasks in order. So, a multithreaded video-editing application can apply two effects at once. This is clear from our *Shopper* application benchmarks result. Its overall score of 159 is one of the highest we've seen, but it's helped a lot by the video-encoding test, which is multithreaded.

We also tried running two applications at once to see how it copes with multitasking. It scored 5,645 in PCMark04 and also managed to encode 15 per cent of a video. This compares well to the Athlon 64 X2 4800+, which scored 6,162 in PCMark04 and encoded 20 per cent of the video. Single-core processors generally do well at only a single task, as they have one processor core for two applications; dual-cores can dedicate one core to each application, getting good results in both.

The Athlon 64 X2 3800+ is very good value for new technology and costs around the same as the single-core Athlon 64 4000+. If you run a lot of multithreaded applications or you often multitask, it's excellent value and will get better as more applications are developed for it. Those looking for a powerful processor for today, though, should spend the money on a fast single-core processor instead.

David Ludlow

✓ Good value; good performance

✗ Needs multithreaded applications to work properly

SPECIFICATIONS Athlon 64 X2 3800+, two cores each with 2.0GHz clock speeds, Socket 939. **Part code** ADA3800BVBOX

